DOCUMENT RESUME

ED 251 451 SP 025 517

AUTHOR Putnam, Joyce; Duffy, Gerald G.
TITLE A Descriptive Study of the Preactive and Interactive Decision Making of an Expert Classroom Teacher. Research Series No. 148.
INSTITUTION Michigan State Univ., East Lansing. Inst. for Research on Teaching.
SPONS AGENCY National Inst. of Education (ED), Washington, DC.
PUB DATE Aug 84
CONTRACT 400-81-0014
NOTE 34p.; Paper presented at a Symposium at the National Reading Conference (Austin, TX, November 30, 1983).
AVAILABLE FROM Institute for Research on Teaching, College of Education, Michigan State University, East Lansing, MI 48824 ($3.00)
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Classroom Techniques; *Decision Making; Elementary Education; Reading Instruction; *Research Methodology; *Student Reaction; Teacher Behavior; Teacher Effectiveness; *Teacher Response; *Teacher Student Relationship; Teaching Styles

ABSTRACT

An expert reading instruction teacher was studied for one academic year to explore his interactive decision making processes. Previous lines of research have indicated that, for some teachers, interactive decision making involves more than simply maintaining established routines that assure smooth activity flow and involves deviating from the pre-planned activities to attend to issues of content and pedagogy. In this study, Shavelson and Stern's models of preactive and interactive decision making were used to describe the expert teacher's actual performance. Specific examples of teacher-student interactions are given, with analyses of how they reflected the close relationship that existed between the teacher's preactive and interactive decision making and his knowledge, values, and beliefs about how reading should be taught. The study revealed that at least some teachers do make more interactive decisions during reading instruction. It also dramatized the relationship between preactive and interactive teaching, and the relationship between instructional plans and implementation of those plans. The study also emphasized that interactive decision making may not be a static phenomenon; rather, it takes different forms at different times of the academic year according to the function of instruction and the teacher's focus. The results support the Shavelson and Stern Models (1981) and suggest that those models are useful for explaining teacher decision making and planning further research. (JD)

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Research Series No. 148

A DESCRIPTIVE STUDY OF THE PREACTIVE AND INTERACTIVE DECISION MAKING OF AN EXPERT CLASSROOM TEACHER

Joyce Putnam and Gerald G. Duffy

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SP 025 517

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Published By

The Institute for Research on Teaching
252 Erickson Hall
Michigan State University
East Lansing, Michigan 48824-1034

August 1984

This work is sponsored in part by the Institute for Research on Teaching, College of Education, Michigan State University. The Institute for Research on Teaching is funded primarily by the Program for Teaching and Instruction of the National Institute of Education, United States Department of Education. The opinions expressed in this publication do not necessarily reflect the position, policy, or endorsement of the National Institute of Education. (Contract No. 400-81-0014)

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Abstract

This paper describes one expert teacher's decision making while planning for and providing reading instruction to high- and low-group students. The major research questions were (1) Can Shavelson and Stern's models of pre-active and interactive decision making be used to describe the teacher's actual performance? and (2) Can a taxonomy of critical decisions and their consequences be described on the bases of the teacher's decision making?. We found that the decision making models are useful in describing this teacher's actual teaching performance. Critical decisions and their consequences were also identified.

A DESCRIPTIVE STUDY OF THE PREACTIVE AND INTERACTIVE DECISION MAKING OF ONE EXPERT CLASSROOM TEACHER[1]

Joyce Putnam and Gerald G. Duffy[2]

Reading educators have traditionally assumed that teachers rely upon a rational decision-making model to decide what to do during reading instruction. However, research has failed to substantiate the existence of an idealized model of teacher decision making (Brophy, 1984; Duffy & Anderson, 1982; Shavelson, 1983). In fact, Shavelson (1983) states that "a person's capacity for formulating and solving complex problems such as those presented in teaching is very small compared with the enormous capacity of some ideal model of rationality" (p. 393).

Recent studies of teacher decision making can be summarized in terms of three major findings. First, while teachers do make year-long plans, they do not specify goals and objectives during daily planning and do not follow the prescriptive model of planning emphasized in most teacher education programs (Joyce, 1978-79; Shavelson & Stern, 1981). Second, teachers make interactive decisions, but these neither pervade instruction nor tend to become routinized. Teachers fine tune the original plan rather than substantively changing it (Joyce, 1978-79; Marland, 1977). Third, the teacher's main concern during both day-to-day preactive planning and interactive teaching is maintaining a smooth flow of classroom activity (Duffy, 1982; Shavelson, 1983). Shavelson (1983) explains it thus:

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[1]Paper presented at a symposium on teacher decision making at the National Reading Conference, Austin, Texas, on November 30, 1983.

[2]Joyce Putnam is a researcher with, and Gerald Duffy a co-coordinator of, the IRT's Teacher Explanation Project. Putnam and Duffy are associate professor and professor, respectively, with MSU's Department of Teacher Education.

> a person constructs a simplified model of a real situation in order to reduce its complexity. Thus, teachers behave rationally with respect to the simplified models of reality that they construct. (p. 393)

So, while teachers may not use idealized models of rationality in making decisions, their instructional behavior is understandable if one's perspective includes the constraints on their information-processing capabilities. Research on decision making has helped researchers understand the complexity of the teacher's instructional environment, how this environment constrains teacher thinking, and how it establishes "boundaries within which decision making will be carried on" (Joyce, 1978-79, p. 75).

This "boundary setting" is particularly noticeable during interactive teaching. Most teachers use a form of recitation during the interactive phase of reading instruction: The teacher asks questions, students respond, and the teacher corrects (Duffy & Roehler, 1982; Duffy & McIntyre, 1982). Within this format, procedures take priority over substantive decision making. As Shavelson (1983) says: "Teachers' interactive teaching may be characterized as carrying out well-established routines" (p. 400). He then proposes a model in which a teacher's instruction is viewed as "classroom teaching routines" and the teacher monitors the classroom during instruction to determine whether routines proceed as planned. If the routine works, instruction continues according to the routine; if not, the teacher either decides to handle the problem immediately or to delay action. Hence, while Shavelson says it is clear that teachers do make interactive decisions, the decisions he refers to concern classroom management and maintenance of activity flow.

The Problem

While acknowledging the validity of these findings about teacher decision making, we nevertheless have asked, "Is that all there is?" Is the

interactive decision making of most classroom teachers confined to carrying out well-established routines, or do some teachers make decisions that go beyond maintaining activity flow and attend to more substantive issues of content and pedagogy?

Two lines of research influence us in this regard. First, Putnam's earlier study (1983) of the decision making of an exemplary teacher indicated that, with this teacher at least, interactive decision making went beyond routines and activity flow. The teacher processed complex information that she organized into schematic structures, which she used to simplify the actual act of teaching. Second, on-going studies of the effect of explicit teacher explanation on student reading achievement (Duffy & Roehler, 1983) indicate that the most effective teachers make substantive statements to students about the content being taught, its application, and the strategy for using it; they do spontaneous pedagogical maneuvering in presenting to students this substantive information about content. Both lines of research suggest that, for some teachers at least, interactive decision making involves more than simply maintaining the routines that assure smooth activity flow.

Consequently, we decided to study the classroom reading instruction of an expert teacher for one academic year. This report derives from a descriptive study of his decision making while planning for and instructing high- and low-group students over one academic year. It explores one model for a teacher's preactive decisions, a model of the same teacher's interactive decisions, and a taxonomy of the teacher's critical decisions and their consequences. We asked the following questions to derive a basis for intervention studies of teacher effectiveness.

1. Can Shavelson and Stern's models of preactive and interactive decision making be used to describe the teacher's actual performance?

2. Can a taxonomy of critical decisions and their consequences be described on the basis of the teacher's decision making?

If it does appear that expert teachers make certain kinds of critical decisions during reading and that these have a consequence for instructional effectiveness, then teacher educators need to train teachers to better make such decisions during instruction. Researchers also need to study whether teachers who make such decisions are indeed more effective than those who merely follow well-established routines.

Procedures

We conducted the study at a K-6 elementary school located in a low-to-middle class neighborhood in a midwestern city. The school had a naturally integrated environment and was not involved in the busing program ordered by the district court. An undergraduate teacher education program operated in the building, and 14 classroom teachers had undergraduate students placed in their classrooms during four half-days a week. The school's teachers had participated in university programs for 10 years and were accustomed to the presence of professors, undergraduates, and graduate students.

The study's subject was the second author, Duffy, who is a reading teacher educator and researcher. He has worked in field-based teacher education programs for much of his tenure at Michigan State University; he is a former classroom teacher and has spent part of two sabbatical leaves teaching in elementary school classrooms. He was responsible for providing three reading methods courses to the undergraduate students in the building and for supervising their teaching of reading. In addition, he assumed responsibility for regularly teaching two reading groups in a third/fourth-grade classroom so the undergraduates would have access to a demonstration site.

Of the 25 children in the class, 35% represented ethnic minorities. Four reading groups had been formed, and one child received individual instruction. Duffy taught the individual child, the top group, and the lowest group; the regular teacher taught the other two groups.

The first author, Putnam, observed Duffy 32 times during the year. She audiotaped 24 lessons and took field notes. In addition, four of his lessons were videotaped, each followed by a stimulated recall interview. Putnam also interviewed him several other times during the year. She used ethnographic field study methods: taking field notes, reflecting on the notes, and rewriting the notes based on reflection. She based the questions for each interview on her analysis of observational and recorded data. The data collection was guided by her concern and interest in teacher decision making.

As the field notes (which were dictated on tape), tapes of classroom teaching sessions, and interviews were completed, they were transcribed. Analysis of the student information processing data was completed in the following steps:

1. Putnam read all of the data, noting themes, questions, and potential findings as they related to teacher decision making. She made notes in the margins of the transcripts.

2. She coded the lessons and interview notes to identify the various parts of lessons (introduction, explanation, modeling, interactive instruction, and evaluation of student thought processing). She made notes on the transcript.

3. She coded the data for the second time, identifying the types of decisions the teacher educator demonstrated. These data were verified with Duffy.

4. A third reading and coding for decisions was completed. Changes and additional insights were noted. Putnam communicated the resulting data to Duffy in interview sessions to determine whether he thought they were plausible and whether he could offer additional clarifying information.

Findings

Preactive Decision Model

As this study progressed, it quickly became clear that a close relationship existed between Duffy's preactive and interactive decision making and that a clear set of knowledge, values and beliefs about how reading should be conducted formed the basis for all his decisions.

Shavelson and Stern's (1981) model of factors contributing to a teacher's pedagogical judgments and decisions illustrates this interrelationship. Shavelson and Stern say that information about students, the teacher's attribution of probable cause of student behavior, individual differences in beliefs among teachers, the nature of the instructional task, and the institutional constraints will all influence teacher judgments and contribute to pedagogical decisions.

This study indicates that Duffy had a set of beliefs, values, and knowledge that he used to make both preactive and interactive decisions. We used Shavelson and Stern's model (Figure 1) to categorize and report this information. Figure 2 shows the underlying data base he used. See especially Box B (individual differences between teachers) and Box C (teachers' attributions of probable causes of student behavior and teacher use of heuristics). Items in Box D (nature of the instructional task) and Box F (institutional constraints) also influenced his decisions. Data for Box A (information about student) was unavailable to Duffy until the beginning of the school year because he was not a regular teacher in the building and thus did not benefit from previous interactions with the children. Figure 2 gives the specific information Duffy used and the ways Putnam observed that information influencing his decisions. The information listed in Boxes A-F was used as the basis for preactive and interactive decisions. Putnam found that the focus of Duffy's preactive

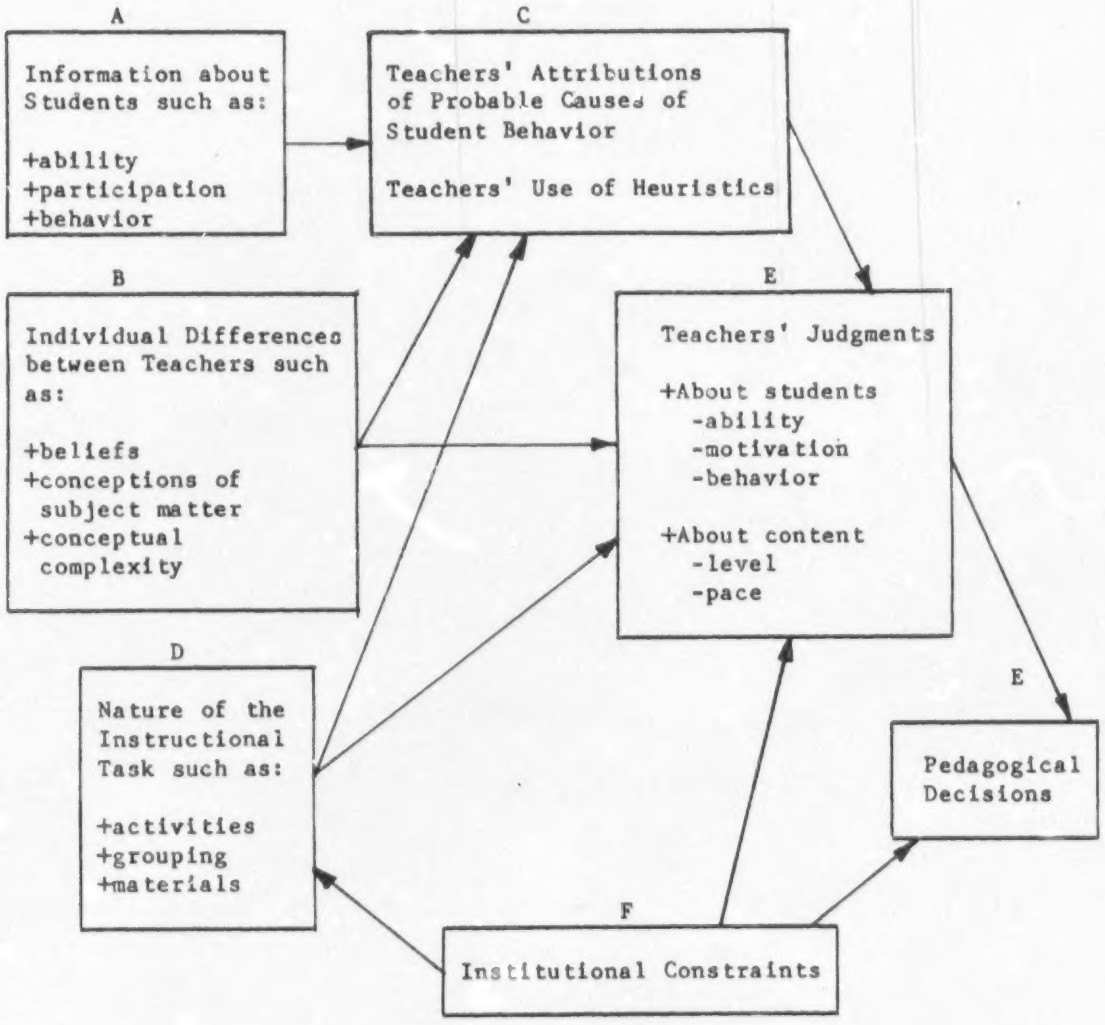

Figure 1. Some factors contributing to teachers' pedagogical judgments and decisions (from Shavelson & Stern 1981, p. 472).

decisions changed over time and occurred in four phases through the academic year. A strong relationship existed between preactive and interactive decisions. Also a strong relationship existed between a given phase and the one preceding or following it.

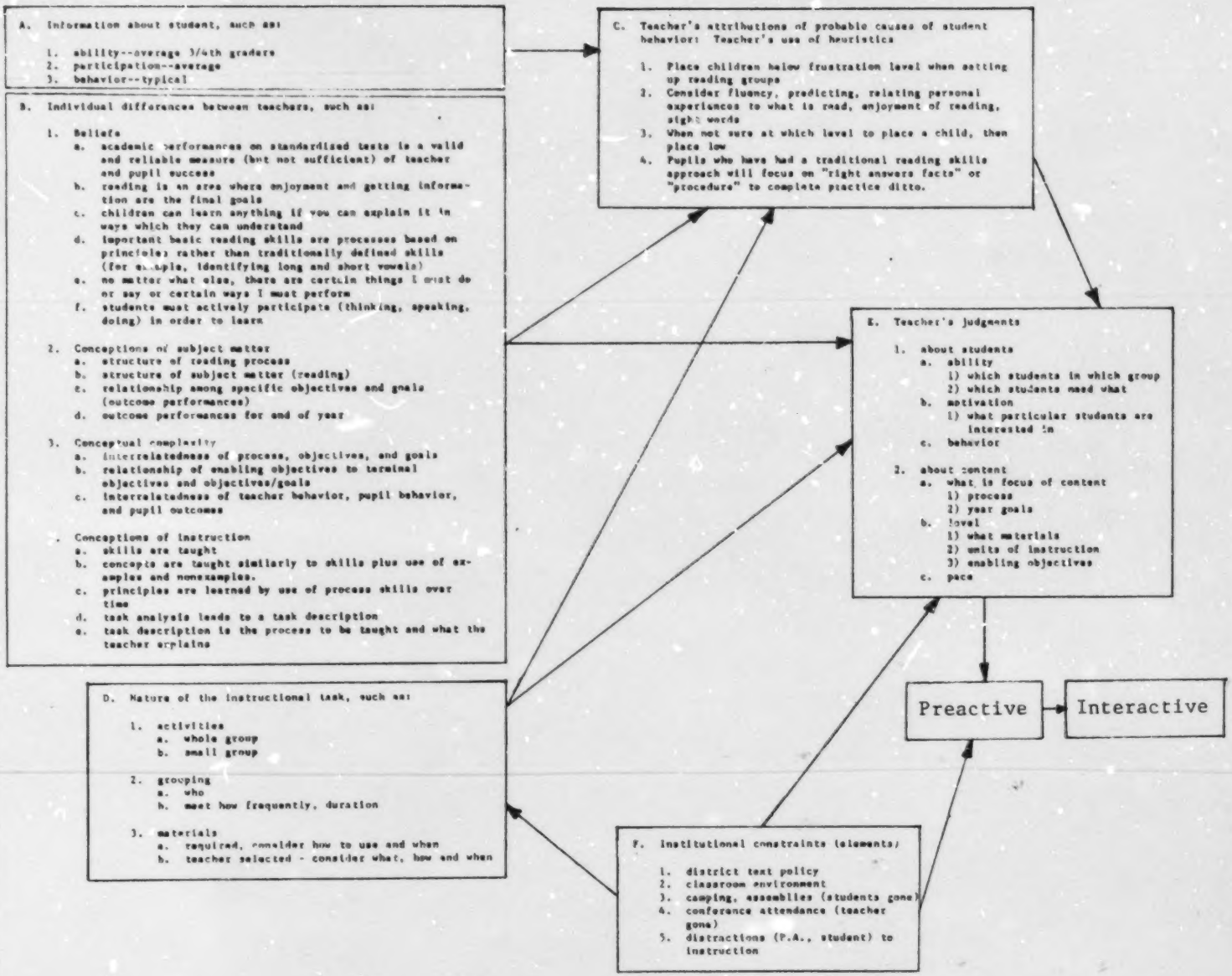
A. Information about student, such as:
1. ability--average 3/4th graders
2. participation--average
3. behavior--typical
B. Individual differences between teachers, such as:
1. Beliefs
a. academic performances on standardized tests is a valid and reliable measure (but not sufficient) of teacher and pupil success
b. reading is an area where enjoyment and getting information are the final goals
c. children can learn anything if you can explain it in ways which they can understand
d. important basic reading skills are processes based on principles rather than traditionally defined skills (for example, identifying long and short vowels)
e. no matter what else, there are certain things I must do or say or certain ways I must perform
f. students must actively participate (thinking, speaking, doing) in order to learn
2. Conceptions of subject matter
a. structure of reading process
b. structure of subject matter (reading)
c. relationship among specific objectives and goals (outcome performances)
d. outcome performances for end of year
3. Conceptual complexity
a. interrelatedness of process, objectives, and goals
b. relationship of enabling objectives to terminal objectives and objectives/goals
c. interrelatedness of teacher behavior, pupil behavior, and pupil outcomes
4. Conceptions of instruction
a. skills are taught
b. concepts are taught similarly to skills plus use of examples and nonexamples.
c. principles are learned by use of process skills over time
d. task analysis leads to a task description
e. task description is the process to be taught and what the teacher explains
C. Teacher's attributions of probable causes of student behavior: Teacher's use of heuristics
1. Place children below frustration level when setting up reading groups
2. Consider fluency, predicting, relating personal experiences to what is read, enjoyment of reading, sight words
3. When not sure at which level to place a child, then place low
4. Pupils who have had a traditional reading skills approach will focus on "right answers facts" or "procedure" to complete practice ditto.
E. Teacher's judgments
1. about students
a. ability
1) which students in which group
2) which students need what
b. motivation
1) what particular students are interested in
c. behavior
2. about content
a. what is focus of content
1) process
2) year goals
b. level
1) what materials
2) units of instruction
3) enabling objectives
c. pace
D. Nature of the instructional task, such as:
1. activities
a. whole group
b. small group
2. grouping
a. who
b. meet how frequently, duration
3. materials
a. required, consider how to use and when
b. teacher selected - consider what, how and when
F. Institutional constraints (elements)
1. district test policy
2. classroom environment
3. camping, assemblies (students gone)
4. conference attendance (teacher gone)
5. distractions (P.A., student) to instruction
Preactive
Interactive

Figure 2. Factors contributing to the expert teacher's preactive and interactive decisions (after Shavelson and Stern's Teacher Pedagogical Judgments and Decisions Model, 1981.)

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For example, the first set of preactive decisions concerned student assessment. Duffy decided how to assess the students individually in order to elicit data about each one's (1) general interests and interest in reading, (2) fluency, (3) sight word recognition, (4) ability to predict or generalize based on personal experience and what is read, and (5) ability to use reading strategies in order to gain meaning (see Figure 3, Phase 1). The preactive decisions Duffy made in Phase 1 yielded data that he used to make preactive decisions in Phase 2. The second set of preactive decisions involved (1) what would be taught to whom, (2) what materials would be used by whom, (3) what type of instruction would be used initially, and (4) what management and organization routines and procedures would be established (see Figure 3, Phase 2). The focus of the preactive decisions changed a third time. In Phase 3, preactive decisions concerned (1) management (in one of the groups), (2) explicit explanations in individual lessons, and (3) appropriate practice and application of instructional content. (See Figure 3, Phase 3.) The fourth and final set of preactive decisions focused on the cohesiveness of individual lessons as they meshed with longitudinal instructional goals and objectives (see Figure 3, Phase 4).

As might be expected, a strong relationship existed between the preactive decisions and the interactive decisions from phase to phase (see Figure 3). In Phase 1, the preactive decisions focused on what was to be assessed, while the interactive decisions focused on content and each student's individual reading performance. In Phase 2, the preactive focus was on organizing and implementing an instructional program, and the interactive focus was on the management decisions that ensure a smooth instructional flow during the program's operation. In Phase 3, the preactive decisions focused on lesson preparation designed to promote strategic student response to reading, while

(September)

Phase 1 - Data Collection

Nature of Instruction

Individual Assessment Sessions. Each session included Duffy and a student. Duffy established a comfortable rapport and interviewed the students. He asked them to do things, he recorded data, and he asked questions based on what he observed them doing.

Decisions		
Preactive	Interactive	
	Management	Pedagogically Related
1. What will be assessed. a. Interest in general & in reading b. Fluency, sight word c. Ability to use reading strategies in order to gain meaning d. Elicit, predicting, and ability to relate own life to what was read 2. How will it be assessed. a. Individual 1) what materials 2) when	None were observed	1. When to stop establishing rapport and gathering affective data 2. Based on verbal fluency, where to begin graded oral reading paragraphs 3. Based on fluency and answers to questions when to stop or proceed 4. When to end session based on student behavior and/or completion of data collection

(October - January)

Phase 2 - Establishing Management Whole Group and Transitions to and from Small Group and Individual Instruction

Nature of Instruction

The lessons have formal starting and stopping points. They appear to be scripted and Duffy uses only those student interactions that support the script during instruction. Transitions within lessons and between major activities (changing groups) are not smooth, but children spend most of their time listening and appear attentive.

Decisions		
Preactive	Interactive	
	Management	Pedagogically Related
1. Unit Plan contained objectives, what the research subject would say What, how, when Reading Process focus of lessons Activities to promote Enjoyment of reading	1. All documented decisions were concerned with management and organization of environment, routines and procedures 2. Isolated disruptive student behavior was contained or "erased" with	No content related decisions were documented

Figure 3. Specific examples of Duffy's preactive and interactive decisions and the progressive decision phase (continued on next page).

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Figure 3, continued

(January)

Phase 3 = Establishing Small Group Teacher Pupil Interactive Mode

Nature of Instruction

Major transitions with the whole class are smooth, but within lesson transitions are not. Students don't follow through between Tuesday, Thursday, Tuesday, and Thursday lessons. The directed instruction is well planned and appears scripted. Duffy uses student data to make some lesson changes. He also uses student responses as a part of his interactions to get them to consider what he said and asked and how what they say is a logical response. He clearly keeps instruction focused on process outcomes and avoids negative feedback on incorrect facts.

Decisions		
Preactive	Interactive	
	Management	Pedagogically Related
1. "What, how, when" are the metacognative factors students are to become strategic about.	1. Procedures to get work completed between sessions.	1. Proceed or not based on pupil responses as related to process 2. To give feedback based on fact or process 3. To change examples 4. To change lesson

(February - May)

Phase 4 = Interactive Instruction that Facilitates Schema Testing and Building

Nature of Instruction

Duffy and his students begin lessons with little socializing. Students usually begin interaction with on-task comments. Lessons flow smoothly. Duffy's problem frame has become larger, focusing pupils on transferring processes to new situations. Students know how to use processes taught earlier. They know when to talk and when to wait.

Decisions		
Preactive	Interactive	
	Management	Pedagogically Related
1. Planned Unit which includes series of activities 2. Scripted How, What, Why 3. Focus on How to learn and What to learn	None	1. Interactive decisions concerning positive and negative feedback include process and fact 2. Pedagogical Maneuvering

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interactive decisions, based on student responses to reading instruction, concerned management problems and pedagogical problems. In Phase 4, Duffy's preactive decisions focused on units of integrated and interrelated instruction, while the focus of his interactive decisions involved ensuring student achievement of instructional outcomes. Duffy operated in Phase 1 for about a month, in Phase 2 for about three-and-a-half months, in Phase 3 for about three weeks, and in Phase 4 for about three months.

This expert teacher based his preactive decisions on a particular view of what constitutes reading instruction, and this view was the driving force behind his lessons. He made systematic preactive decisions that dealt with the content (what to teach), the instruction (how to teach), management of instruction (organization over time), and student behavior (doing assignments).

Interactive Decision Model

We think Duffy made two kinds of interactive decisions during the 32 instructional sessions that were observed. The first were management and organization decisions, and the second were related to the pedagogical maneuvering he did to ensure that he was teaching the content effectively.

The following incident typifies his management and organization decisions. One morning in early September, he taught a language experience lesson to the whole class. At the end of the lesson, he referred to the agenda he had written on the board, signaling the order in which the reading groups would meet and what students were to bring to the group. The reading table had been arranged before school with just the right number of chairs set in places where the students could see Duffy, the board, and one another.

The first and second reading groups met and received direct instruction lessons and directions for independent practice. When the third group came for its instruction, two things happened. First, a student who had been out of the room came late; he did not have his book with him, and there was not a chair for him. Second, another boy did not have his paper and had to return to his seat for it. The initial interactions in this group were as follows (T = teacher, S = student):

> T: Lowell.[3] We've got to get you a chair, Lowell. Why don't you take that chair? We don't want you standing during the lesson.
>
> T: Let's see if I can find a book for Lowell.
>
> T: Did you lose your book? . . . Okay, gang, here we go. Number 1, I'm starting to keep a chart. This doggone tape recorder is right in the way. I'm going to keep a chart on each of you on what we do for seatwork all the time, all right? And last time, we did a worksheet on look alikes and I got a paper from everybody but Tim. Do you remember this paper right here, Tim?
>
> S: Yeah, I can go get that right now.
>
> T: Oh, good. Go get that for me so that I can correct it.

During debriefing, Duffy described his decision as follows. First, he thought he had previously established enough routines so that students would bring books and turn in papers at the appropriate times. However, there was no routine for chairs. He was responsible for setting up the environment and had simply not put enough chairs at the table. Faced with a pupil standing, he had to stop the flow of the reading lesson and find a chair. Since there was no class routine for chairs, he took action to get the chair. At the same time, the tape recorder was in the way but was worked around. Finally, Tim's

---

[3]All students' names are pseudonyms.

paper was missing. The decision that the paper was necessary for the planned instruction meant that Tim had to go to his seat to get it. After these delays and remedies Duffy proceeded with instruction.

A second set of interactive decisions concerned his pedagogical maneuvering to achieve the outcomes of instruction. Three examples are illustrative.

The first occurred in November, 1982. The lesson focused on story grammar. Duffy wanted the students to summarize stories using problems and solutions as guidelines. After explaining what this meant, he listed a series of steps for students to think about. Then he asked them to identify the problem in a story they had read about baseball. After several fruitless attempts to get the students to use the strategy to identify the story problem, Duffy interactively decided to change the example, hoping that the new example, which was to be less complex, would more clearly illustrate the strategy. Consequently, he gave the example of a baseball game, drawing an analogy from the problem structure and solution of a baseball game to the problem structure and solution of a story.

In the second example, Duffy changed his plans based on feedback from students who had not read the story. The interaction went as follows:

> T: Now, what we did last time is I told you to read on your own the first story in this unit, right? You want to open up to that? Now this is an interesting story with an interesting title. Now let me make sure, did you all read the story? Did you read the story? You didn't read the story! What am I going to do with you?
>
> S: I didn't even know we were supposed to.
>
> T: Oh, you didn't know we were supposed to read the story? Well, we'd better abandon this. No sense in talking about a story only two of you have read. I must not have made that clear on Tuesday, huh?

The third kind of interactive decision regarding pedagogical maneuvering involved decisions about how to respond to student errors. Duffy decided how to respond by assessing the degree to which each student's response indicated s/he was employing the intended strategy. For instance, when a student's response clearly indicated that s/he was not thinking correctly about the strategy, Duffy did not hesitate to correct the error. Consider, for example, the following excerpt from a lesson on story grammar:

> T: What do you suppose I want you to do when you read stories from now on? If I did that, what do you suppose the first thing is I want you to do? Reese?
>
> S: About words.
>
> T: No, no, no, about meaning, not about the words. If I ask you about words, yeah, we go to that chart. But now we're talking about meaning. If it's a story, what's the first thing I want you to start asking yourself about that story?
>
> S: The problem.
>
> T: Okay, I want you to ask yourself, "What is the problem?"

However, when the student's response indicates that the student is doing the desired mental processing, Duffy reinforces that even if the content information is technically incorrect. For instance, in the following example, a student demonstrates a mental strategy for determining that a text is fantasy but cites incorrect information about snake bites in the process. Duffy decides not to correct the content error; instead, he decides to reinforce the use of the correct mental strategy.

> T: How can you make a test to know whether something is real or make believe? We're going to have to do that all the way through on all five of these stories.
>
> S: Because nobody can live through three bites from a rattlesnake.

T: Okay. What do you say in your head, what do you say in your mind so that you know that nobody can live through three snake bites or nobody can ride a cyclone, Eric? Tell me, how do you know that?

S: Because nobody has ever done it.

T: How do you know that nobody has ever done it?

S: Because it's impossible.

T: How do you know that it's impossible?

S: It can't be done.

T: Well, that's right. Okay. Let me tell you how I do it and I think you'd do it the same way, okay? Now, what I do is I say to myself, "Look for everything I've ever heard and everything anybody's ever told me." My experience says that that's not likely to happen. Okay? Now, if in my experience it's not likely to happen, then it's probably not true, okay? Now, that's really what you're saying and that's what Eric was saying. Okay? It's the same thing. But you think back on what you know, because you've got lots of knowledge in your heads, don't you? Don't you?

S: Ummunh.

T: Yes. And that's how you test it. Okay? So, when you say Pecos Bill couldn't have ridden a cyclone, the major reason why you say that is make-believe is because, in your own experience, you know that nobody has ever been able to do that. From your own experience, you know that if you get three snake bites, what's going to happen to you?

S: You'll die.

T: You'll die, right.

S: Especially rattlesnakes.

This expert teacher, then, appeared to make two kinds of interactive decisions. The first related to management and tended to occur early in the school year when routines for organizing and conducting instruction were being established. The second related to pedagogy, in that he changed instructional examples, changed the lesson itself, and made decisions about what to say in

response to student errors based on his perception of the students' movement toward the intended outcome of instruction.

Just as Shavelson and Stern's (1981) model of preactive factors accurately reflects Duffy's thinking about instruction, their model of interactive decision making (see Figure 4) is also applicable to Duffy's work. For instance, the interactive decisions he made appear to be based on classroom routines he wished to establish (management decisions) or on his anticipation of how he intended instruction to proceed (pedagogical decisions). For instance, when Duffy decided to change examples during instruction in using story grammar as a strategy for meaning getting, he had a classroom teaching routine planned. However, the students' responses cued him that they were not aware of the mental process he was teaching. After several unsuccessful efforts to correct the situation (cue not in tolerance), he took immediate action. Because he had no routine immediately available (he had no additional examples already prepared), he took action by spontaneously generating a new example that he thought would focus students on the desired mental processing.

In sum, the descriptive data regarding his teaching are consonant with the Shavelson and Stern models of factors influencing decision making and of interactive decision making.

Taxonomy of Critical Decisions and Their Consequences

Duffy's critical decisions were both preactive and interactive. Critical preactive decisions provided a path for successful instruction. Critical interactive decisions tended to either contribute or detract from successful instruction.

He made critical, preactive decisions about both management and pedagogy. Those related to management included decisions (1) to change the physical

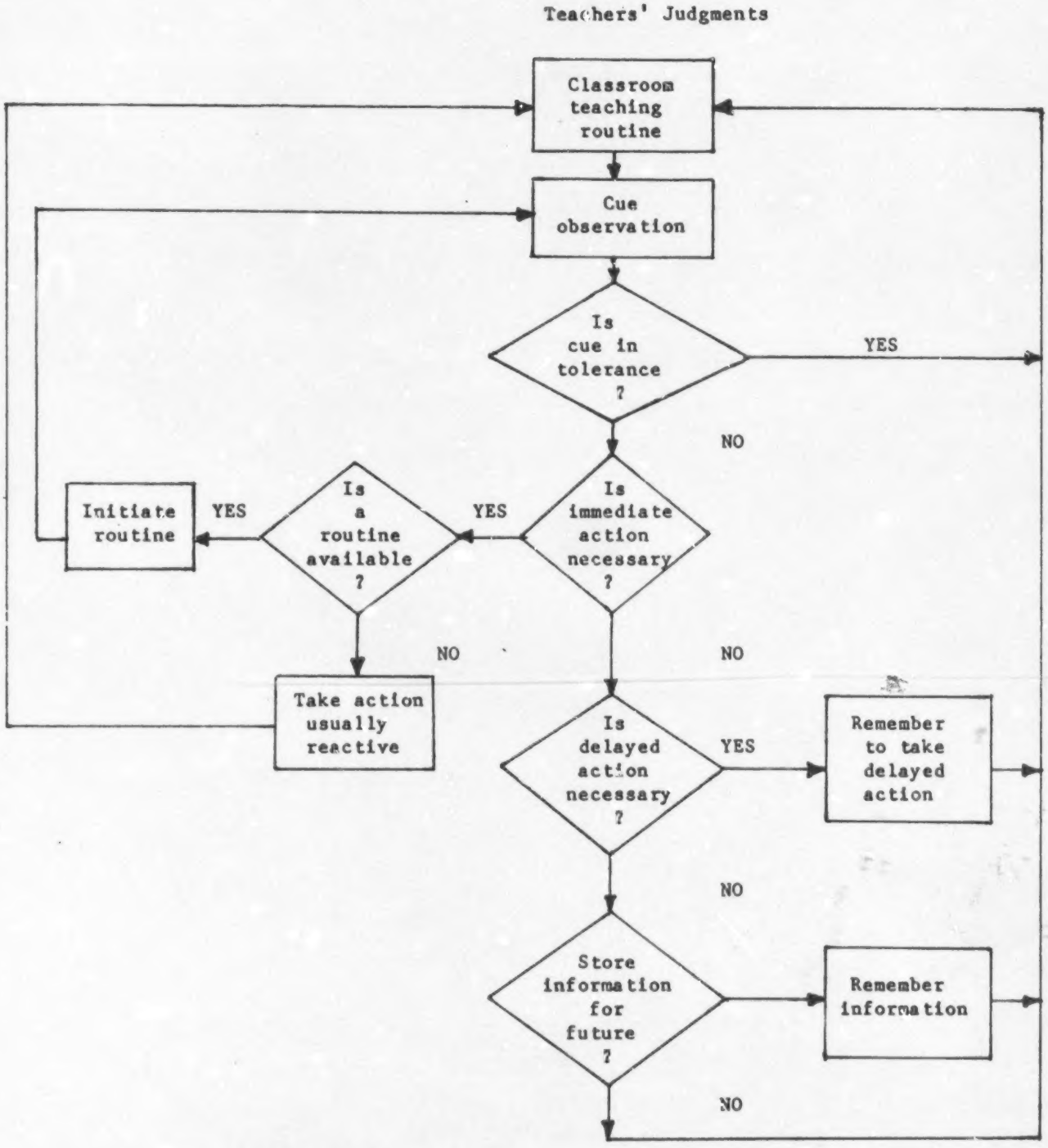

Figure 4. Model of teachers' decision making during interactive teaching (from Shavelson & Stern 1981, p. 483).

environment to ensure a smoother activity flow; (2) to modify his instructional responsibilities and those of the host classroom teacher to match the constraints of the situation; and (3) to establish modified routines for completing assigned tasks in reading groups.

He made virtually all his critical pedagogical decisions during the preactive stage. For instance, he made preactive decisions about what assessment data to collect. The data were then collected and used in another set of preactive decisions about the formation of instructional groups, the materials to use, the reading processes to be taught, the stated goals, and the units of instruction. In making preactive decisions, Duffy also used an interactive instructional style of communication, followed a particular format for instructional explanation, and focused on analyses and descriptions of the academic tasks to be taught.

Fewer interactive decisions occurred. As noted earlier, such decisions focused on maintaining the smooth flow of instructional activity and on pedagogical maneuvering that involved changing examples and deciding how to respond to student errors.

Some examples illustrate both long- and short-term consequences of the preactive and interactive decisions Duffy made. For instance, he decided in the preactive stage to teach students how to read strategically. This decision caused him to be explicit about using strategies. Note, for instance, the emphasis in the following excerpt from a lesson transcript.

> T: Okay, what I want to do, I want you to pay attention up here on the board and what I'm going to do is put a word up on the board that maybe you've never seen before and maybe you don't know it. Okay? Now if you do know it, pretend you don't know it. Okay? All right, let's. . . (Teacher is writing on chalkboard.) Okay?

S: (inaudible)

T: You're supposed to pretend you don't know it! Okay? Now, if you come against this word when you're reading a story and you've never seen it before, that means that you don't know it by sight, right? You don't know it instantly, right? And the first way you try to figure it out is . . . Christie?

S: Umm, look around for words.

T: That's right. And what if you look around this word to figure it out and to guess what it is and there aren't any clues there? Does that happen sometimes? Sure it does. If there aren't any clues there, then you have to do what?

The effect of this preactive decision continued to be evident throughout the school year. For instance, note the following excerpt:

T: Speaking of the skills, I gave you the task of telling me when you got here this time what the meaning of the word "claims" was on page 45. I gave it to you last Thursday when I was here. Turn to page 35. I mean 45, I'm sorry.

S: Oh, why did he just do that?

T: Page 45, third line down.

S: Are we going to do this?

T: It says, "It sounds suspiciously like one of those 'claims' that you can play a Brahms violin concerto." Now, how did you know what "claims" meant there? We've been working on multiple word meanings, how does it apply?

S: The words around it?

T: Okay. Point out what words around it tell you what "claims" means.

S: From "it" to "isn't."

T: Well, that's the sentence, but which words in there give you clues to what "claims" means? It says over here "claims" could mean several things. How did you know which "claims" it was, Will?

S: Claims that you can play the Brahms violin concerto, well, it could mean that you claim you can play a

violin, claim means to say you say you can do it but nobody knows.

T: Yes, but how do you know that's the meaning there, Will?

Similarly, Duffy's conception of reading instruction emphasized making students aware of how the reading system works and how they can consciously control that system in getting meaning from text. The following example is a consequence of that preactive decision:

T: Now, the reason we're reading these stories, in addition to the fact that they're fun, is to make use of the skills that we've been talking about. And in this particular story we were using the skill of figuring out the meaning of a word by prefix. Where is one example of that skill in action? Look at "The Woman Chief" on page 10 and 11. Now I want you to find examples there, in that story, of words that were prefixed.

S: It was on page 10, 11, 12, and 13.

T: Yes. Right. Can you find an example of a word that is prefixed?

S: I know.

T: What's an example of a word that's prefixed in that one, Eric?

S: Impossible.

T: Okay, on the first page, "impossible." Okay. What does that mean, Eric? What does impossible mean?

S: Not able to happen?

T: Not able to happen, or not possible. Very good. Is there another one, Ricky?

S: Disappear

T: Okay, what does that mean?

S: Not to appear.

T: Okay, very good. Just like we learned in the lesson, right?

There are also consequences of interactive decisions. For instance, in Phase 2 of the academic year, Duffy noted that the students in one group were not completing their independent practice activities. He made the interactive decision to deal with this management problem as follows:

T: And I'm on page 14. Are you on page 14? Good grief! I'm seeing an awful lot of blank pages here.

S: Yeah, I couldn't understand it.

S: Did we have to do this?

T: Yeah, we were gonna finish page 14 and then do pages 15 and 16. Did you have trouble with pages 15 and 16?

S: I didn't know we had to do them.

T: You didn't know you had to do them?

S: I forgot.

T: You forgot?

S: I forgot. I didn't understand this part.

T: Well, what about this part here?

S: I didn't want to do that part.

S: I only did page 15.

T: You only did page 15? What was your problem?

S: I was going to do 16, but I wasn't sure.

T: Okay, okay. Let's talk for a minute here about what you do with the assignments that I give you out of this reading book. If I give you this assignment on Thursday, what are you doing? Are you waiting until the next Tuesday to do it?

S: No.

T: Are you waiting until Monday to do it?

S: Uhmm hum.

T: I know Jerry tried to do it and he couldn't do it because it was hard, and I don't mind that, if it's hard that's one thing. Forgetting is another.

S: It was hard for me.

T: No, you didn't forget today and I should give you special praise, all right? Because you've been having a tough time with that. But you remembered today, didn't you?

S: Yeah.

T: Good. When did you do it?

S: I started it yesterday.

T: My message, dear heart, is that if I give you the assignment on Thursday, it would be best if you get it done on Thursday or Friday. Then you don't forget, you see. Now, I'm glad you got it done. But if you had done this on Thursday or Friday, you probably wouldn't have forgot, okay? You understand what I'm saying? Because you know that's a long time. The same with you, young man. Now, I'm going to give you an assignment today. When should you do it?

S: Today.

The consequence of this interactive decision is seen in the lesson transcript 15 days later:

T: Come on, Reese, let's go. I want to tell you that this group is really moving. Like gangbusters. I want to show you these papers. Remember when we were having trouble with you finishing the papers a while ago? Look at this. Fantastic. Look at this. Fantastic, right? Look at that. Fantastic. Look at that, Lucretia. Fantastic. Look at that, Christy. Fantastic, right?

However, not all interactive decision making turns out so well. For instance, when teaching a lesson on how to summarize, Duffy made the interactive decision to change the example in order to assist student learning. However, rather than helping students focus on the mental processing employed in the strategy as intended, the new example distracted the students and led them to focus on a new semantic element rather than on the strategic process to employ in solving the problem.

T: Let's assume that Will asks Eric about the book that you're reading in U.S.S.R.[4] And he says to you, what's that book about? And Eric starts telling him. But you can't tell him everything that the book is about because it would take you forever to tell everything. So you look for a short way to tell about the book. What I want to do today is to teach you how to tell somebody a short description of what happened. It's called summarizing.

(He then models the processing one does to summarize and then directs the students to a story they were supposed to have read in preparation for the class.)

Now, let's try it with an example. Let's take "Badge 53." Have you read enough of "Badge 53" to know what the problem is in that story? What is the problem, Eric?

S: He doesn't know how to play baseball very good.

T: Okay. Good. And what happens to him because he can't play baseball very well?

S: I can't remember that much. I don't have a good memory.

T: All right, let me ask you another question. How does he solve the problem?

S: By picking a job.

T: Okay. How does that solve the problem? If the problem is he doesn't play baseball very well, how does taking a job solve that problem? I think we may have the wrong problem.

(After more interaction with the students, Duffy decides that "Badge 53" will not serve as an illustration of the mental processing one does in getting meaning from a story. He makes the interactive decision to switch examples.)

T: Let's use another example. Let me give you another one that we can use to illustrate. Did you follow the World Series?

S: I did.

S: I watched the last game last night.

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[4]Uninterrupted, Sustained, Silent Reading.

T: You watched the last game last night. You know enough about the World Series so that I can talk about it?

S: I didn't watch the World Series. I don't stay up that late.

T: You don't stay up that late. What is the problem? What is the problem in a baseball game?

S: What?

T: What is the problem? What is the problem in a baseball game?

S: Um, you strike out.

S: Ricky can't hit a ball.

T: No. No. The problem you're trying . . . no, I'm talking about *any* baseball game. What's the problem you're trying to solve?

S: Hitting the ball.

In trying to simplify the learning task, the expert teacher's interactive decision to switch examples actually distracts the students. Instead of focusing on the mental processing used to summarize, the students focus on the problems they encounter when they play baseball. The interactive decision detracts from the instruction.

In sum, there are observable and documented consequences of Duffy's critical decisions. Many of the decisions, particularly the preactive ones, govern the nature of the instruction throughout the year. Interactively, there are fewer decisions; of these, some expedite instruction and some impede it.

Conclusions

This study did five helpful things. First, it provided a view of teacher instructional decision making that previous research missed by suggesting that at least some teachers make more interactive decisions during reading instruction than had been previously documented. Second, it

dramatizes the relationship between preactive and interactive teaching and the relationship between instructional plans and implementation of those plans. This element is particularly important because previous research on teacher conceptions of reading (Duffy & Anderson, in press) indicated that teachers' conceptual beliefs about reading did not play an important part in teacher decision making, a finding that this study refutes. Third, this study emphasizes that interactive decision making may not be a static phenomenon; rather, it takes different forms at different times of the academic year according to the function of instruction and the teacher's focus. Fourth, this study supports the Shavelson and Stern (1981) models and, as such, should increase researchers' confidence in using these models for both explaining teacher decision making and planning further research. Finally, the study provides a beginning toward identifying critical instructional decisions and their consequences.

While the study has been encouraging regarding the importance of teacher decision making, it nevertheless reminds researchers and teacher educators again of the complexity of classroom instruction. While interactive decisions *were* made, they were much fewer in number than preactive decisions, and they sometimes had negative rather than positive influences on instruction. While the teacher studied was not perfect (he was out of practice), he was an expert (in what he knew) by almost any reasonable definition of the term. If expert teachers make fewer interactive than preactive decisions, some of which have negative influences, what are teacher educators to advise preservice and in-service teachers about interactive decision making? From this study, at least, it is clear that researchers have far to go before they can be explicit with teachers about how to improve their interactive decision making during reading instruction.

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